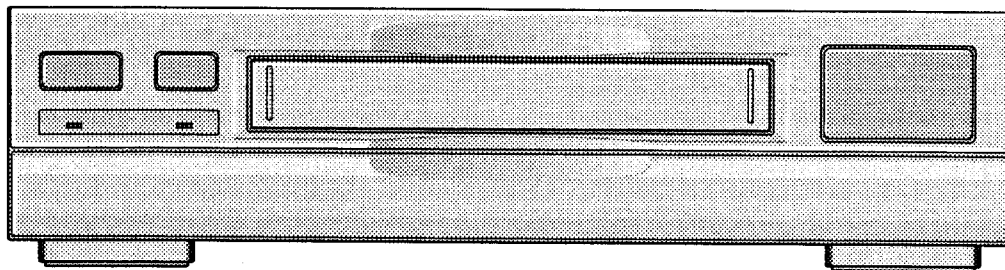




INSTRUCTION MANUAL

TLS-2100P

Time Lapse Video Cassette Recorder	English	GB
Time Lapse Videorecorder	Deutsch	D
Magnétoscope à cassette cyclique	Français	F
Videograbador en lapsos de tiempo	Español	E
Videoregistratore a cassette, a fotogrammi differenziati	Italiano	I
时延录像机	中文	CS



PRECAUTIONS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR OTHER MOISTURE. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only. If the power supply cord (AC power cord) of this appliance is damaged, it must be replaced. Return to a SANYO Authorised Service Centre for replacement of the cord.

Location

GB

For safe operation and satisfactory performance of your VCR, keep the following in mind when selecting a place for its installation:

- Shield it from direct sunlight and keep it away from sources of intense heat.
- Avoid dusty or humid places.
- Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes at the top and bottom of the VCR. Do not place the unit on a carpet because this will block the ventilation holes.
- Install the VCR in a horizontal position only.
- Avoid locations subject to strong vibrations.
- Avoid moving the VCR between cold and hot locations (see "Moisture Condensation Problems", this page).
- Do not place the VCR directly on top of the TV, as this may cause playback or recording problems.

Avoiding Electrical Shock and Fire

- Do not handle the power cord with wet hands.
- Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.
- If any liquid is spilled on the VCR, unplug the power cord immediately and have the unit inspected at a factory-authorized service centre.
- Do not place anything directly on top of this VCR.

CAUTION: Do not put your hand or other objects in the cassette loading slot because of risk of injury or accident. Be sure to keep small children away from the VCR.

Moisture Condensation Problems

Cause:

When the VCR is first installed, moved from a cold area to a warm area or placed in a location with high humidity, dew (moisture) may form in the unit. The Dew indicator (d d d d) blinks. If you operate the VCR with dew inside, damage may result.

Prevention:

- ① Make all necessary connections.
- ② Plug the power cord into a 220 – 240 V AC outlet.
- ③ Do not operate the VCR for approximately 2 hours.

When the VCR reaches room temperature, the Dew indicator (d d d d) will turn off and the VCR will be ready to operate.

Power on/off

Power is switched on/off by pressing the **POWER** button.

Power off display



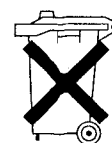
Power on display



"Power off" is the condition in which only the time is displayed.

Disconnect the power cord from the wall socket if the VCR is not to be used for a long time.

Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.



FEATURES

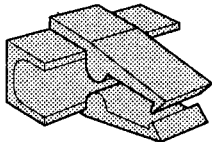
- Computer controllable with optional interface board
- Field recording/playback
- 12, 24-hour mode recording audio playback
- Autorepeat recording
- Series recording function
- Alarm recording function
- Single image recording function
- On-screen mode setting
- Various recording mode
- Integrated time date generator
- Day/Time search mode
- Alarm scan/search function
- Forward/Reverse field advance function
- 30-day memory backup
- Security lock
- Recording check function
- Head-cleaning function

What is Time-Lapse Video?

A standard VCR records 50 images (fields) per second, while this time lapse VCR can record at different rates. This feature makes it possible to record up to 963 hours on a single video tape. As a result, this unit is extremely useful for long-term monitoring or recording changes that take place slowly over an extended period of time (such as the blooming of a flower).

ACCESSORIES

Check to make sure that all the accessories listed below have been included with your VCR.

Power cord	Holder
	

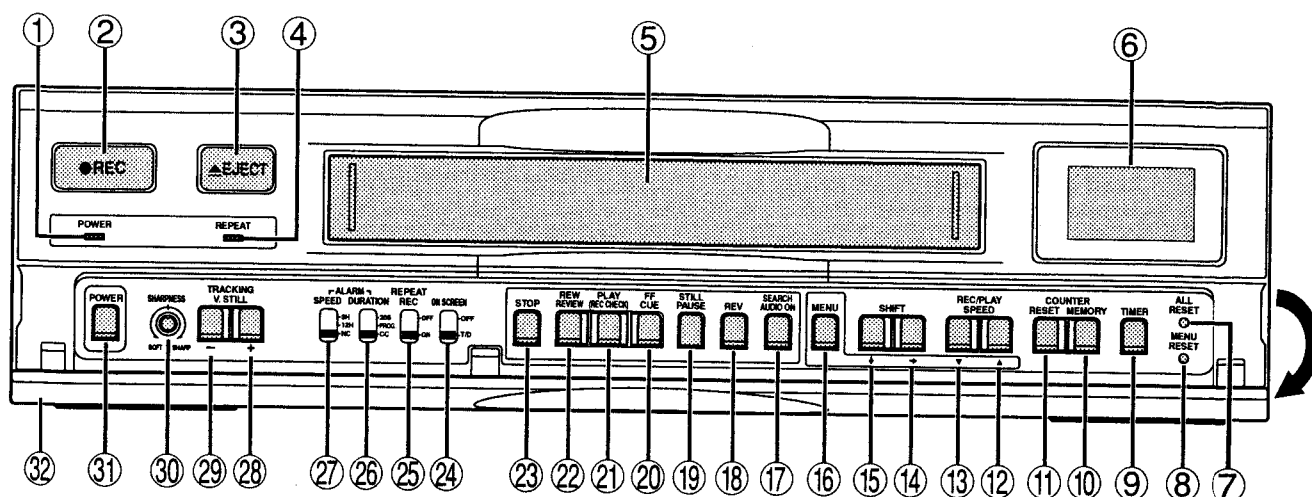
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GB

LOCATIONS OF CONTROLS AND INDICATORS

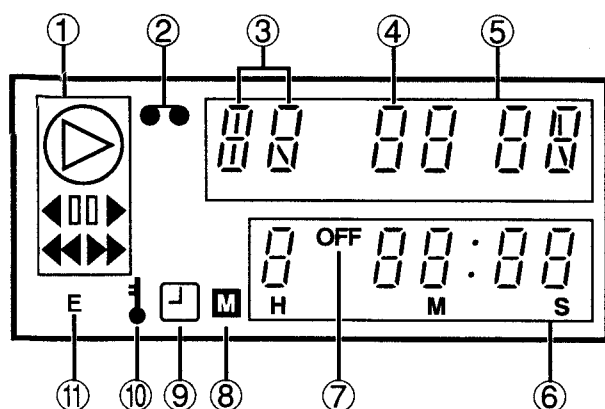
Front Panel



- ① **POWER LED**
- ② **REC (record) button**
- ③ **EJECT button**
- ④ **REPEAT LED (autorepeat recording indicator)**
- ⑤ **Cassette loading slot**
- ⑥ **Digital display panel**
- ⑦ **ALL RESET button**
- ⑧ **MENU RESET button**
- ⑨ **TIMER button**
- ⑩ **COUNTER MEMORY button**
- ⑪ **COUNTER RESET button**
- ⑫ **REC/PLAY SPEED ▲ button**
(increase recording/playback speed)
- ⑬ **REC/PLAY SPEED ▼ button**
(decrease recording/playback speed)
- ⑭ **SHIFT → (display position right) button**
- ⑮ **SHIFT ↓ (display position down) button**
- ⑯ **MENU button**
- ⑰ **SEARCH/AUDIO ON button**
- ⑱ **REV (reverse playback) button**
- ⑲ **STILL/PAUSE button**
- ⑳ **FF/CUE (fast forward/cue) button**
- ㉑ **PLAY (REC CHECK) button**
- ㉒ **REW/REVIEW (rewind/review) button**
- ㉓ **STOP button**
- ㉔ **ON SCREEN switch**
- ㉕ **REPEAT REC (autorepeat recording) switch**
- ㉖ **ALARM DURATION (alarm recording time) switch**
- ㉗ **ALARM SPEED (alarm recording speed) switch**
- ㉘ **TRACKING/V. STILL + button**
- ㉙ **TRACKING/V. STILL – button**
- ㉚ **SHARPNESS control**
- ㉛ **POWER button**
- ㉜ **Front door**

LOCATIONS OF CONTROLS AND INDICATORS

Digital Display



① Operation Indicators

They display the actual operation mode.

Operation Mode	Indicator
Record (REC)	○
Record pause (REC PAUSE)	○ + - -
Playback (PLAY)	▷
Still image (STILL)	▷ + - -
Fast forward (FF)	▶▶
Rewind (REW)	◀◀
Cue (CUE)	▷ + ▶▶
Review (REVIEW)	▷ + ◀◀
Reverse playback (RVS PLAY)	▷ + - -
Field shift forward (FIELD SHIFT +)	▷ + + ▶
Field shift backward (FIELD SHIFT -)	▷ + + ◀

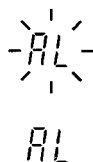
② Cassette indicator

Comes on when a cassette is loaded.

③ Alarm indicator

Flashes when an alarm is being recorded:

Comes on after the alarm has been recorded:

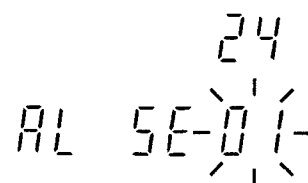


④ Power Loss indicator

Comes on after a power loss.

⑤ Mode display

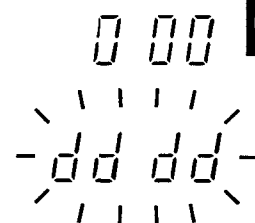
- Recording/playback speed mode
- Alarm search mode



- Alarm scan mode
- Time/Date search mode



- Single image recording mode
- Dew display



⑥ Counter display

- Time display



- Linear time counter display



⑦ OFF indicator

Comes on when the tape end has been reached after a recording, except during autorepeat recording mode.

⑧ Memory Stop indicator

Comes on when the memory stop function is engaged.

⑨ Timer Recording indicator

Comes on when in timer recording stand-by mode, or during a timer recording.

⑩ Security lock indicator

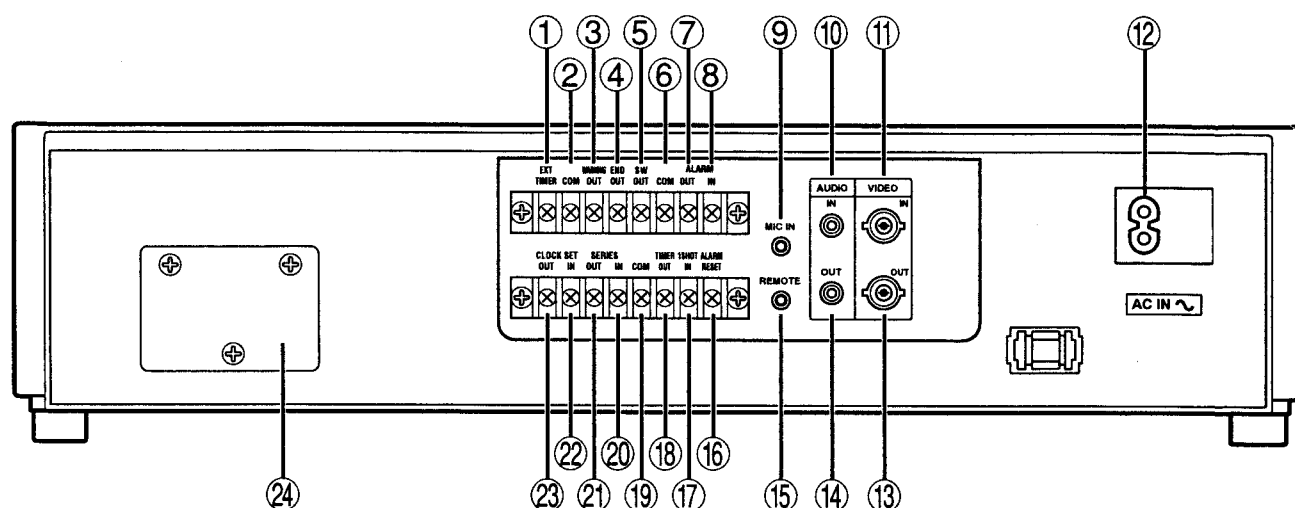
Comes on when the security lock is engaged.

⑪ External input indicator

Comes on when recording using the **EXT TIMER** input terminal.

LOCATIONS OF CONTROLS AND INDICATORS

Back Panel



- | | |
|---|---|
| ① EXT TIMER (external timer input) terminal | ⑬ VIDEO OUT (video output) jack |
| ② COM (common) terminal | ⑭ AUDIO OUT (audio output) jack |
| ③ WARNING OUT (warning output) terminal | ⑮ REMOTE (remote control input) jack |
| ④ END OUT (tape end output) terminal | ⑯ ALARM RESET (alarm reset input) terminal |
| ⑤ SW OUT (switch output) terminal | ⑰ 1 SHOT IN (single image recording trigger input) terminal |
| ⑥ COM (common) terminal | ⑱ TIMER OUT (timer recording output) terminal |
| ⑦ ALARM OUT (alarm output) terminal | ⑲ COM (common) terminal |
| ⑧ ALARM IN (alarm input) terminal | ⑳ SERIES IN (series recording trigger input) terminal |
| ⑨ MIC IN (microphone input) jack | ㉑ SERIES OUT (series recording trigger output) terminal |
| ⑩ AUDIO IN (audio input) jack | ㉒ CLOCK SET IN (clock set trigger input) terminal |
| ⑪ VIDEO IN (video input) jack | ㉓ CLOCK SET OUT (clock set trigger output) terminal |
| ⑫ AC Power input | ⑳ COVER (for optional computer interface board opening) |

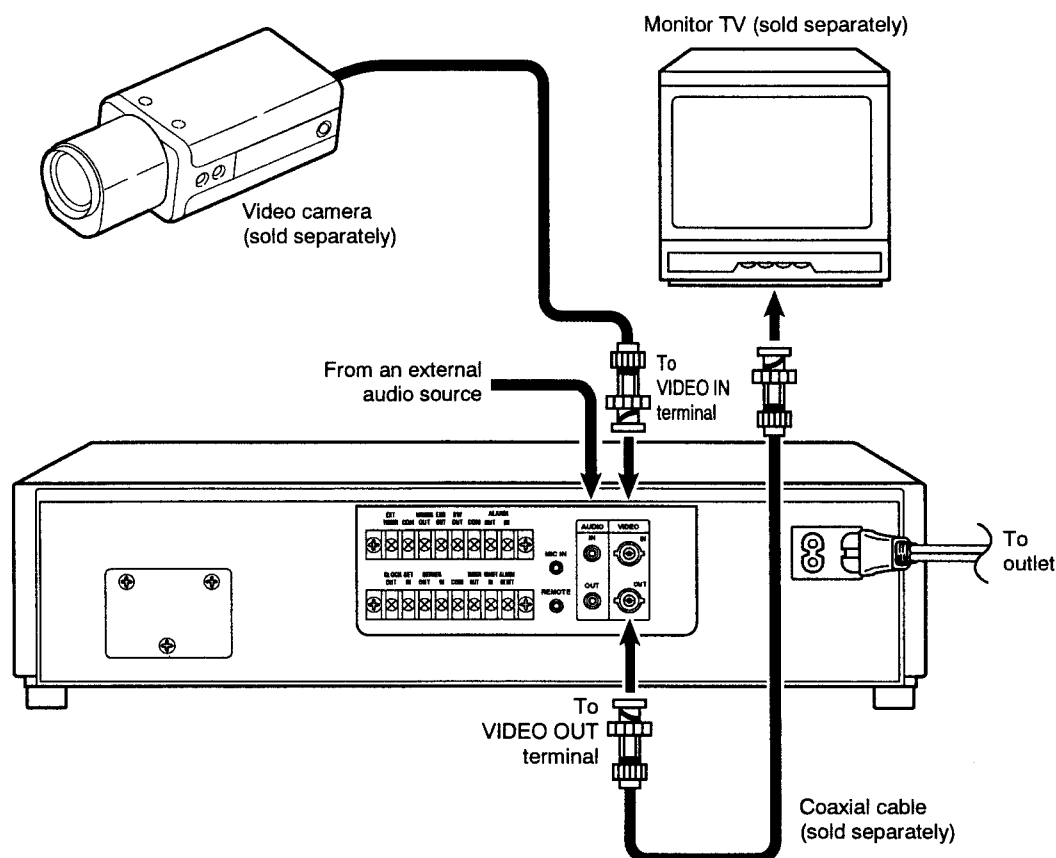
NOTE:

- The RS-232C operation board is sold separately.

CONNECTIONS

Connect the video camera and monitor TV as shown in the figure below.

NOTE: Make sure to turn the power off on all devices before making the connections.



GB

IMPORTANT NOTE (U. K. Only)

The wires in the mains lead are coloured according to the following code:

Blue: Neutral

Brown: Live

If the colours of the wires in the mains lead of this apparatus do not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured blue must be connected to the terminal which is marked with the letter **N** or coloured blue or black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter **L** or coloured brown or red.
- Do not connect either wire to the **Earth** terminal.

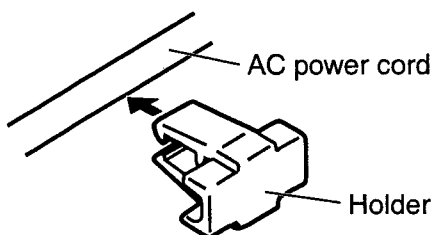
NOTE:

- For more details, please refer to the manuals accompanying all other devices. If the connections are not made properly, it may cause a fire or damage the equipment.

CONNECTIONS

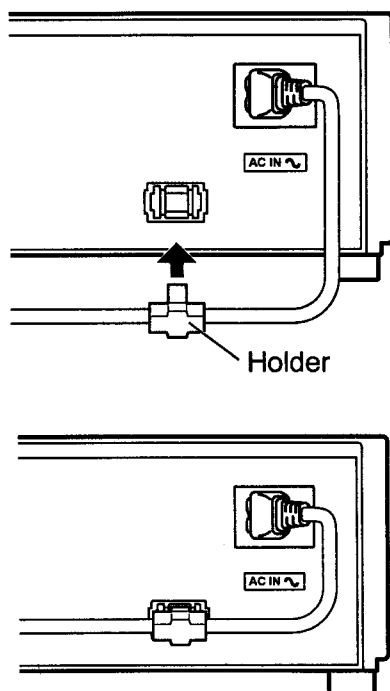
Power cord

- 1 Plug the power cord (supplied) into the AC power input (AC IN ~) on the VCR back panel. Insert the plug straight and firmly.
- 2 Install the AC power cord into the holder.



GB

- 3 Fix the holder to the VCR back panel.



About the memory reset

If the VCR location is changed or to cancel previous settings, please reset the memory as described below.

All the settings as the time and date will be reset, and the security lock will be cancelled.

To reset the memory, press the **ALL RESET** button.

VIDEO CASSETTE TAPES

Use only video cassette tapes bearing the **VHS** logo. This VCR was primarily designed for use with E-180 cassette tapes, it is recommended to use E-180 VHS video cassette tapes for optimal performance.

Handling Cassette Tapes

The cassette tapes should always be stored vertically, in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

Do not tamper with the cassette mechanism and never touch the tape with your fingers.

Protect the cassette tapes from shocks or strong vibrations.

To Protect your Recordings

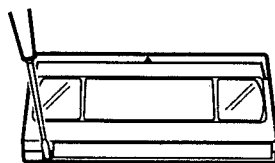
After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.

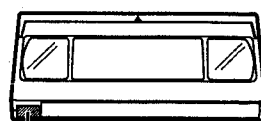
NOTES:

- If you try to record on a cassette without erasure-prevention tab, the VCR will eject the cassette.
- If the **TIMER** button is pressed when a cassette without erasure-prevention tab is loaded, the timer recording indicator (⏰) will start flashing and a buzzer will sound.

Erasure-prevention tab



To prevent accidental erasure, remove the tab after recording.

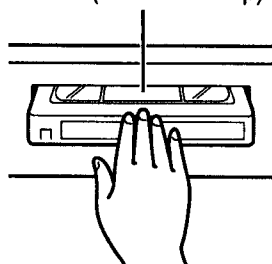


To record again, cover the hole with vinyl tape.

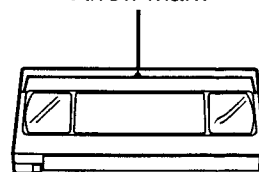
Loading

- 1 Place the cassette, label side up, in the loading slot. Gently push the centre of the cassette until it is loaded automatically.
 - When the cassette is loaded, the cassette indicator "●●" will light on the digital display.
 - The time display will switch to the reset counter "0H 00M 00s" display.

Label (Arrow side up)



Arrow mark



Unloading

- 1 In STOP mode, press the **EJECT** button.
 - The cassette is automatically ejected.

NOTES:

- Do not insert any object in the cassette loading slot, as that may cause injury and damages to the VCR.
- If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.

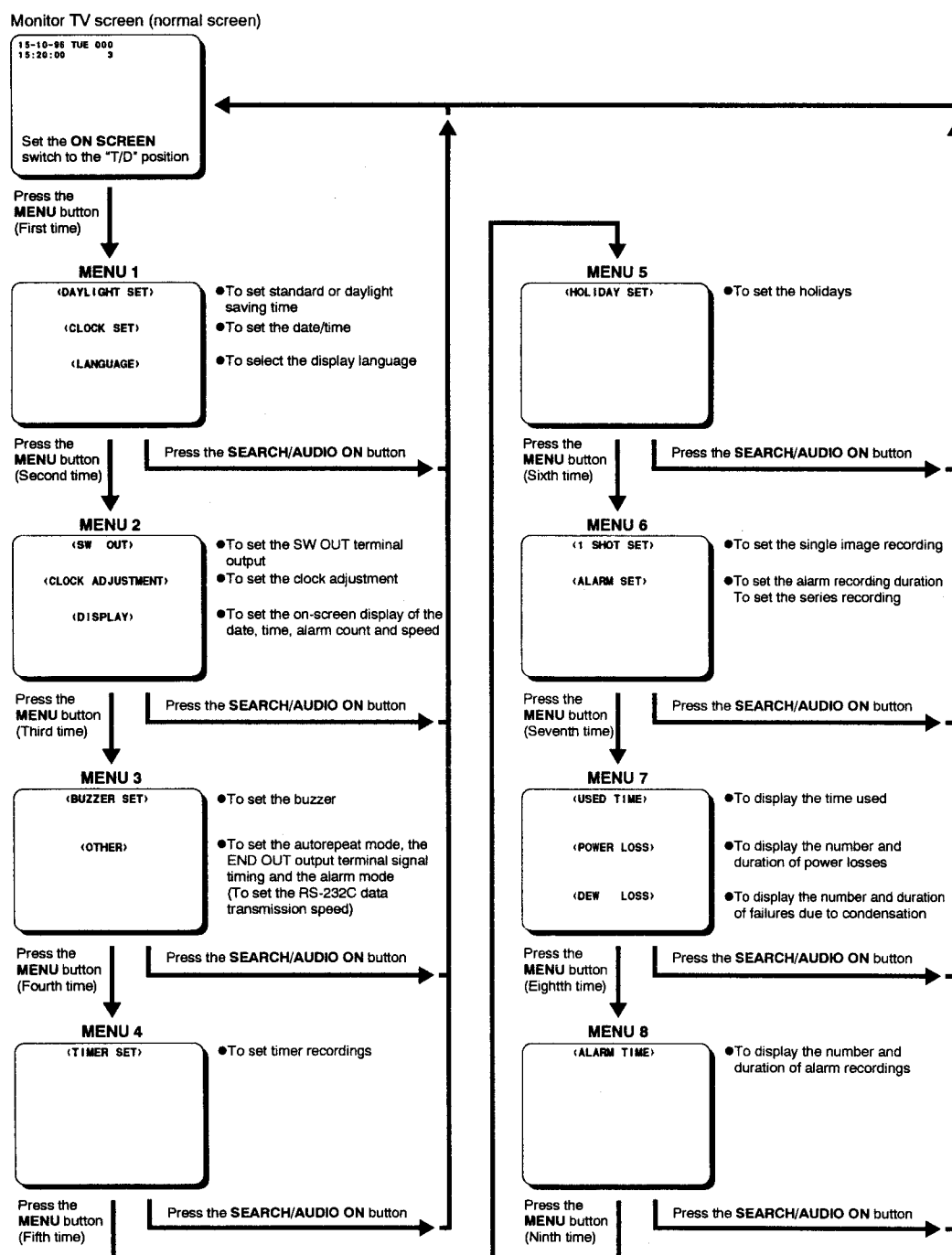
GB

TYPES OF ON-SCREEN DISPLAYS AND DISPLAY SEQUENCE

NOTES:

- If the VCR is in timer recording stand-by mode (the "□" indicator displayed on the digital display), the on-screen displays will not be available. First press the **TIMER** button, to cancel the recording stand-by mode, then proceed with the VCR programming. When finished, press the **TIMER** button again to return the VCR to timer recording stand-by mode.
- When a menu is displayed, recording will not be possible.
- Press the **SEARCH/AUDIO ON** button, the setting procedure is now completed then the normal screen is displayed.
- During recording or playback the menus cannot be displayed.
- To reset the settings of a menu to their original values, select the desired menu then press the **MENU RESET** button. The MENU 7 (USED TIME) date cannot be reset.

GB



SETTING THE CLOCK AND LANGUAGE

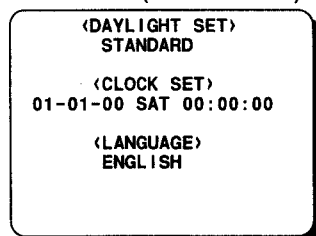
MENU 1

Example: To set the clock to October 15, 1996 at 3:20 PM (15:20).

Clock and Language Setting

- ① Turn the power on to all devices used.
- ② Press the **MENU** button, the MENU 1 (CLOCK SET) is displayed.

MENU 1 (Initial screen)



- ③ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set STANDARD (standard time)/DAYLIGHT (summer time).
- ④ Press the **SHIFT** ↓ button.
- ⑤ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the day (ex: 15), then press the **SHIFT** → button.
 - The day of the week is set automatically.
- ⑥ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the month (ex: 10), then press the **SHIFT** → button.
- ⑦ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the year (ex: 96 for 1996), then press the **SHIFT** → button.

NOTE:

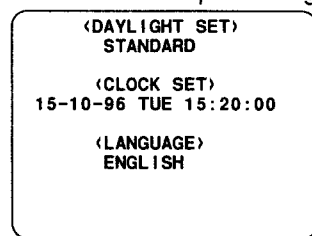
- The last 2 digits only are displayed.

- ⑧ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the hours (ex: 15 for 3 PM), then press the **SHIFT** → button.
- ⑨ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the minutes (ex: 20), then press the **SHIFT** → button.
- ⑩ For accurate clock setting, press the **REC/PLAY SPEED** ▼ button timed with a time broadcast, or other accurate time signal, this will start the seconds counting from 00.
- ⑪ Press the **SHIFT** ↓ button.

- ⑫ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the language.

- Each time the **REC/PLAY SPEED** ▼ (or ▲) button is pressed, a different language, ENGLISH – FRANCAIS – DEUTSCH, is selected.

MENU 1 Example setting



GB

- ⑬ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

- The setting procedure is now completed.

NOTE:

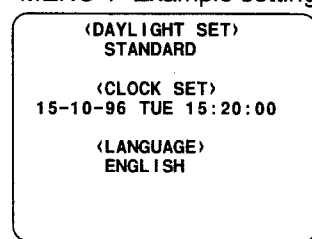
- If a cassette tape is not loaded, you can reset the seconds to "00", by pressing the **COUNTER RESET** button.

Standard/Daylight Time Adjustment

The clock time can be changed to daylight saving time (by adding one hour) or standard time (by subtracting one hour).

- ① Press the **MENU** button, the MENU 1 (DAYLIGHT SET) is displayed.

MENU 1 Example setting



- ② Press the **REC/PLAY SPEED** ▼ (or ▲) button.
 - The display changes to DAYLIGHT (or STANDARD).
 - One hour is added to (or subtracted from) the current time.
- ③ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

CHANGING THE ON-SCREEN DISPLAY MENU 2

Selecting the On-screen Display

You can select to display or not the date, time, the number of alarm triggers and tape speed.

- ❶ Turn the power on to all devices used.
- ❷ Press the **MENU** button, the MENU 2 (DISPLAY) is displayed.

MENU 2 (Initial screen)

(SW OUT)	
FIELD	01
TIMING	FIELD
(CLOCK ADJUSTMENT)	
TIME ADJ.	01:00
OPERATION	IN
(DISPLAY)	
DATE	Y
TIME	Y
AL.COUNT	Y
SPEED	Y

- ❸ Press the **SHIFT ↓** button, until the desired item for which the display function will be set is flashing.

- ❹ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set "Y" for the functions described below.

DATE The Day-Month-Year is displayed

TIME The time is displayed

AL.COUNT The number of alarm triggers is displayed

SPEED The recording/playback speed is displayed

- ❺ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

• *The setting procedure is now completed.*

NOTE:

- If the **ON SCREEN** switch is set to the "T/D" position, the items for which "Y" is set are recorded. The items for which "N" was set at step ❹ above are not recorded.

Changing the Date/Time Display Position

- ❶ Turn the power on to all devices used.
- ❷ Set the **ON SCREEN** switch to the "T/D" position.
 - *The date and time are displayed.*

Date/Time display

15-10-96	TUE	000
15:20:00		24

- ❸ Press the **SHIFT →** (or **↓**) button.

• *The display will move towards the right (or the bottom).*

NOTE:

- If the **SHIFT →** (or **↓**) button is kept pressed for 1 second or more the display will move at a faster speed.

NORMAL RECORDING

Normal Recording

- ❶ Turn the power on to all devices used.
- ❷ Load a cassette tape with erasure-prevention tab.
- ❸ Set the **ON SCREEN** switch to the "T/D" position.
- ❹ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording speed.
 - The recording speed is displayed on-screen and on the digital display.
- ❺ Press the **REC** button.
 - The "○" indicator is displayed on the digital display and recording starts.

NOTES:

- If the **REPEAT REC** switch is set to the "OFF" position, recording will continue to the end of the tape, then the VCR will rewind the tape to the beginning then stop. ("OFF" will be displayed on the digital display.)
- If in the MENU 3 (BUZZER SET), TAPE END is set to "Y", the buzzer will be heard as long as "OFF" is displayed on the digital display.
- To cancel the "OFF" display, press the **EJECT**, **PLAY**, **STOP**, **FF/CUE** or **REW/REVIEW** button.

- ❻ To stop recording, press the **STOP** button.

NOTES:

- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.
- If you press on the **REC** button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.
- During recording, the **MENU** button will not function (the menu cannot be displayed).

[Recording Speed]

Recording speed	Maximum recording duration (with an E-180 cassette tape)		Recording interval	Audio recording	Tape motion
3	Standard mode	3 hours	1/50 second	Possible	Continuous
12	Time lapse mode	15	0.1		
24		27	0.18		
48		51	0.34		
72		75	0.5	Not possible	Intermittent
96		99	0.66		
120		123	0.82		
168		171	1.14		
240		243	1.62		
360		363	2.42		
480		483	3.22		
720		723	4.82		
960		963	6.42		
000	1 SHOT	—	1~3 minutes		

GB

Record Pause

Recording can be interrupted temporarily.

- ❶ Press the **STILL/PAUSE** button during recording.
 - The "○" and "⏸" indicators are displayed on the digital display.

NOTES:

- The image appears on-screen but it is not recorded.
 - If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- ❷ To resume recording, press the **REC** button, or press the **STILL/PAUSE** button again.

Autorepeat Recording

The same tape can be recorded over many times.

- ① Press the **MENU** button to display the MENU 3 (OTHER).

MENU 3 (Initial screen)

〈BUZZER SET〉	
ALARM IN	Y
TAPE END	Y
KEY IN	N
〈OTHER〉	
REPEAT	MODE1
TAPE END	-3M
ALARM MODE	Y
RS-232C	1200

GB

- ② Press the **SHIFT ↓** button, until the "REPEAT" setting is flashing.
- ③ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired autorepeat recording mode.
 - MODE 1 The autorepeat mode is automatically canceled if there is an alarm trigger
 - MODE 2 Autorepeat recording takes place even if there is an alarm trigger
- ④ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - *The setting procedure is now completed.*
- ⑤ Set the **REPEAT REC** switch to the "ON" position.
 - *The REPEAT LED will light.*
 - ON Autorepeat recording function on
 - OFF Autorepeat recording function off
- ⑥ Press the **REC** button.
 - *Recording will start. When the tape end is reached, the VCR will rewind it to the beginning regardless of the counter memory, and recording will resume.*

NOTES:

- If during autorepeat recording mode, the **REPEAT REC** switch is set to the "OFF" position, the recording will continue to the end of the tape then it will be rewound to the beginning and stop. "OFF" will be displayed on the digital display.
- If during autorepeat recording there is an alarm trigger, "AL" is displayed on the digital display and alarm recording will take place. (Please refer to page 18, "ALARM RECORDING".)
- If the "REPEAT" setting is MODE 1, the REPEAT LED will go off if there is an alarm trigger.

PROGRAMME TIMER RECORDING ① MENU 4

There are two programme timer recording methods, daily recording or recording on certain days of the week.

Example 1: To record on every Saturday from 9:00 AM to 5:00 PM (17:00), in 24-hour mode (recording speed).

- ① Make sure that the set date and time are correct.
- ② Load a cassette tape with erasure-prevention tab.
- ③ Press the **MENU** button to display the MENU 4 (TIMER SET).

◦ "SUN" (Sunday) will be flashing.

MENU 4 (Initial screen)

(TIMER SET)			
	START	STOP	SPD
SUN	---	---	N
MON	---	---	N
TUE	---	---	N
WED	---	---	N
THU	---	---	N
FRI	---	---	N
SAT	---	---	N
DLY	---	---	N
EXT	*****	*****	N

- ④ Press the **SHIFT ↓** button, until "SAT" (Saturday) is flashing.
- ⑤ Press the **SHIFT →** button.
 - The recording start hour position starts flashing.
- ⑥ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start hour (ex: 09), then press the **SHIFT →** button.
 - The recording start minutes position starts flashing.
- ⑦ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording start minutes (ex: 00), then press the **SHIFT →** button.
 - The recording stop hour position starts flashing.
- ⑧ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop hour (ex: 17), then press the **SHIFT →** button.
 - The recording stop minutes position starts flashing.

NOTE:

- If the set stop time is earlier than or the same time as the set start time, the VCR will consider the stop time to be the following day, and "T" will be displayed next to the recording stop time.

- ⑨ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the recording stop minutes (ex: 00), then press the **SHIFT →** button.
 - The "SPD" (recording speed) position will start flashing.
- ⑩ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the recording speed (ex: 24), then press the **SHIFT →** button.
 - "N" will start flashing.
- ⑪ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select "Y".

Y recording will take place

N recording will not take place

Programmed timer recording Example 1

(TIMER SET)			
	START	STOP	SPD
SUN	---	---	N
MON	---	---	N
TUE	---	---	N
WED	---	---	N
THU	---	---	N
FRI	---	---	N
SAT	09:00	17:00	24 Y
DLY	---	---	N
EXT	*****	*****	N

- Repeat steps ④ to ⑪ to programme timer recordings for other days of the weeks.
- ⑫ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - ⑬ Press the **TIMER** button.
 - The timer recording indicator "□" will light on the digital display, the VCR is now in timer recording stand-by mode.

NOTE:

- To modify, cancel or stop timer recording, press the **TIMER** button to cancel the timer recording mode.

GB

PROGRAMME TIMER RECORDING ② MENU 4

Changing a Programme Timer Recording

- ① Press the **MENU** button to display the MENU 4 (TIMER SET).
- ② Press the **SHIFT** → (or ↓) button, until the setting to correct is flashing.
- ③ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to correct the setting.
- ④ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
- ⑤ Press the **TIMER** button.

To Cancel a Programme Timer Recording

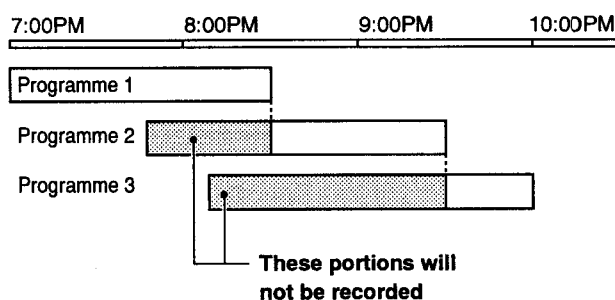
- ① Press the **MENU** button to display the MENU 4 (TIMER SET).
- ② Press the **SHIFT** → (or ↓) button, until the "Y" corresponding to the timer recording to cancel is flashing.
- ③ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to select "N".
- ④ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
- ⑤ Press the **TIMER** button.

To Cancel all Programme Timer Recordings

- ① Press the **MENU** button to display the MENU 4 (TIMER SET).
- ② Press the **MENU RESET** button.
 - All programmed timer recordings are erased.
- ③ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

NOTES:

- During timer recording or timer recording stand-by, all the buttons on the VCR, except the **TIMER** button, are disabled.
- If there was a power loss, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and "P" will be displayed on the digital display. The VCR internal battery is completely recharged after the VCR has been connected to a live outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.
- Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority. (See chart below.)



- To set two or more timer recordings for a same day of the week, press the **SHIFT** → (or ↓) button, until the day of the week for the second recording is flashing, then press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the desired day of the week.
- If no timer recording is set, when the **TIMER** button is pressed the timer recording indicator "□" will start flashing and a buzzer will be heard.
- If "OFF" is displayed on the digital display, timer recording is not possible in order to prevent the recorded tape to be recorded over.
- If "SPD" (speed) is set "000", this will set the single image recording mode. However, pressing the **REC** button will not activate the recording.

PROGRAMME TIMER RECORDING ③ MENU 4

Example 2: To record every week from Friday at 5:20 PM (17:20) to Monday at 7:50 AM, in 72-hour mode (recording speed).

NOTE:

- A timer recording of more than 24 hours can only be set on the last two (7th and 8th) lines of the MENU 4 (TIMER SET).

① Follow steps ① to ③ under "PROGRAMME TIMER RECORDING ①".

② Press the **SHIFT** ↓ button, until the day of the week of the 7th line is flashing.

③ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the desired start day of the week (ex: FRI), then press the **SHIFT** → button.

- The recording start hour position starts flashing.

④ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording start hour (ex: 17), then press the **SHIFT** → button.

- The recording start minutes position starts flashing.

⑤ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording start minutes (ex: 20), then press the **SHIFT** → button.

- The recording stop hour position starts flashing.

⑥ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set "##" for the recording stop hour.

- The rest of the line settings will change to "##:## ## *", and the start time of the next line will change to "##:##" automatically.

⑦ Press the **SHIFT** → (or ↓) button.

- The day of the week of the 8th line is flashing.

⑧ Press the **REC/PLAY SPEED** ▼ (or ▲) button, to set the desired stop day of the week (ex: MON), then press the **SHIFT** → button.

- The recording stop hour position starts flashing.

⑨ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording stop hour (ex: 07), then press the **SHIFT** → button.

- The recording stop minutes position starts flashing.

⑩ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the recording stop minutes (ex: 50), then press the **SHIFT** → button.

- The "SPD" (recording speed) position will start flashing.

⑪ Press the **REC/PLAY SPEED** ▼ (or ▲) button to select the recording speed (ex: 72), then press the **SHIFT** → button.

- "N" will start flashing.

⑫ Press the **REC/PLAY SPEED** ▼ (or ▲) button to select "Y".

Programmed timer recording Example 2

(TIMER SET)			
	START	STOP	SPD
SUN	--:--	--:--	--- N
MON	--:--	--:--	--- N
TUE	--:--	--:--	--- N
WED	--:--	--:--	--- N
THU	--:--	--:--	--- N
FRI	--:--	--:--	--- N
FRI	17:20	##:##	### Y
MON	##:##	07:50	72 Y
EXT	####	####	--- N

← 7th line

⑬ Follow steps ⑫ and ⑬ under "PROGRAMME TIMER RECORDING ①".

GB

RECORDING USING AN EXTERNAL TIMER INPUT

MENU 4

Recording can be controlled by an external start/stop signal input at the **EXT TIMER** terminal.

Example 3: To record using the single input at the **EXT TIMER** terminal, in 12-hour mode.

NOTES:

- External timer input recording can only be set on the 9th line ("EXT") of the MENU 4 (TIMER SET).
- When there is a single being input at the **EXT TIMER** terminal, "E" will be displayed on the digital display and recording is conducted.

- Follow steps ① to ③ under "PROGRAMME TIMER RECORDING ①".

MENU 4 (Initial screen)

	START	STOP	SPD	
SUN	---	---	---	N
MON	---	---	---	N
TUE	---	---	---	N
WED	---	---	---	N
THU	---	---	---	N
FRI	---	---	---	N
SAT	---	---	---	N
DLY	---	---	---	N
EXT	*****	*****	---	N

← 9th line

- Press the **SHIFT ↓** button, until "EXT" (External) setting is flashing.
 - The "SPD" (recording speed) position will start flashing.
- Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the recording speed (ex: 12), then press the **SHIFT →** button.
 - "N" will start flashing.
- Press the **REC/PLAY SPEED ▼** (or **▲**) button to select "Y".

Example 3

	START	STOP	SPD	
SUN	---	---	---	N
MON	---	---	---	N
TUE	---	---	---	N
WED	---	---	---	N
THU	---	---	---	N
FRI	---	---	---	N
SAT	---	---	---	N
DLY	---	---	---	N
EXT	*****	*****	12	Y

- Follow steps ⑫ and ⑬ under "PROGRAMME TIMER RECORDING ①".

- When an external signal is input, "E" will light on the digital display and recording will take place.

NOTES:

- Other timer recordings using the standard procedure can also be programmed.
- The external input signal must be input at the **EXT TIMER** input terminal.

GB

Alarm Recording Setting

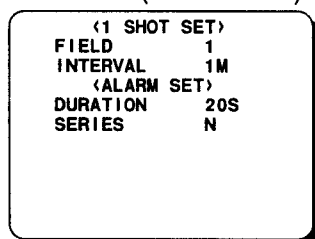
Alarm recording is performed when there is an input (trigger) at the **ALARM IN** terminal, "AL" is displayed on the digital display.

- ❶ Make all necessary connections.
- ❷ Press the **MENU** button to display the MENU 3 (OTHER).
- ❸ Press the **SHIFT ↓** button, until the "ALARM MODE" setting is flashing.
 - Please refer to page 28, on how to set the "ALARM MODE" in the menu "OTHER".
- ❹ Set the **ALARM SPEED** switch to the desired recording speed.
 - 3H 3-hour mode recording
 - 12H 12-hour mode recording
 - NC Recording at the speed already set
- ❺ Set the **ALARM DURATION** switch to the desired recording duration.
 - 20S 20-second recording
 - PROG. Recording for the duration set for the "DURATION" item in the MENU 6 (ALARM SET).
 - CC Recording as long as the alarm signal is being input (minimum recording of 5 seconds)

NOTE:

- If the **ALARM DURATION** switch is set to the "PROG." position, please continue with steps ❹ to ❶.
- ❻ Press the **MENU** button to display the MENU 6 (ALARM SET).

MENU 6 (Initial screen)



- ❼ Press the **SHIFT ↓** button, until the "DURATION" (alarm recording duration) setting is flashing.
- ❽ Press the **REC/PLAY SPEED ▼** (or ▲) button to select the desired alarm recording duration (20 seconds – 5 minutes or CC).
- ❾ Press the **SHIFT ↓** button, the "SERIES" (series recording) setting starts flashing.
- ❿ Press the **REC/PLAY SPEED ▼** (or ▲) button to select "Y" or "N".
 - Y The alarms are received while in recording mode only.
 - N The alarms are received while in recording, stop, power off and single image recording modes.
- ⓫ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

NOTES:

- During alarm recording all buttons are disabled.
- If "OFF" is displayed on the digital display, alarm recording is not possible in order to prevent the recorded tape to be recorded over.
- If an alarm trigger is received while alarm recording is in progress, recording duration for the second alarm will be calculated from that point.
- When there is a power loss during alarm recording, if the power is restored within the recording set during, alarm recording will continue.
- If the alarm scan or alarm search functions will be used to review the recordings, set the recording speed to 3-hour mode and the recording duration to 20 seconds or more.

GB

ALARM RECORDING

Alarm Recording Counter Display

- During alarm recording, "AL" will be flashing on the digital display.
- If the **ON SCREEN** switch is set to the "T/D" position, the number of alarms will flash on the monitor screen.
- The maximum display number of alarm triggers is "999", at the next alarm recording the counter will indicate "000".
- When the MENU 8 (ALARM TIME) is displayed, press the **MENU RESET** button to reset the alarm counter to "000" (all the data of MENU 8 is reset).

GB

Connections to the ALARM IN/OUT Terminals

- Alarm input signal
Connect a make-contact (no voltage) switch between the **ALARM IN** and **COM** terminals.
- Alarm output signal
Normally DC 5V are output between the **ALARM OUT** and the **COM** terminals. When an alarm input (trigger) is received and the unit is recording, the output falls to 0V. Once the alarm recording is over, the output returns to DC 5V.

ALARM RESET terminal

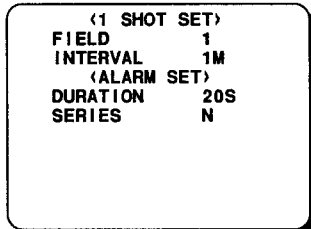
- If the circuit between the **ALARM RESET** and **COM** terminals is closed, alarm recording mode is canceled.

The single image recording function of this VCR can be used to create image data files or animations.

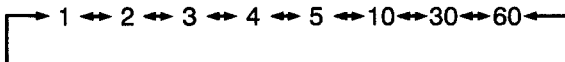
Single Image Recording Setup

- ❶ In stop mode, press the **REC/PLAY SPEED ▼** (or **▲**) button, to set the recording speed to "0 00".
- ❷ Press the **MENU** button to display the MENU 6 (1 SHOT SET).

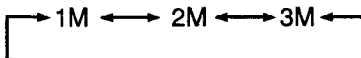
MENU 6 (Initial screen)



- ❸ Press the **REC/PLAY SPEED ▼** (or **▲**) button, to set the number of fields (images) to record every time, then press the **SHIFT ↓** button.
 - With each press of the button, the setting will change as indicated below.



- ❹ Press the **REC/PLAY SPEED ▼** (or **▲**) button, to set the interval between each image recording.
 - With each press of the button, the setting will change as indicated below.

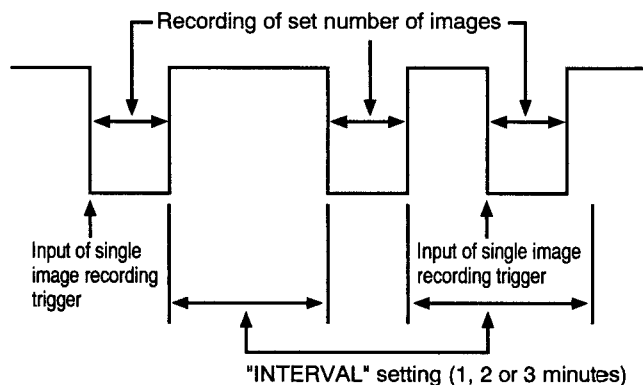


- ❺ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
- ❻ Press the **REC** button.
 - The single image recording mode will be activated (the VCR will be in recording stand-by mode).
- ❼ Press the **REC** button one more time, or send a trigger through the **1 SHOT IN** terminal on the back panel, to start the single image recording.
 - When finished, press the **STOP** button.

NOTES:

- The trigger at the **1 SHOT IN** terminal should be on for 0.1 sec. or more.
- The trigger interval at the **1 SHOT IN** terminal varies according to the number of images to record, but should be over 1 sec.
- If a single image recording trigger is not received (or if the **REC** button is not pressed) during the duration set for "INTERVAL", single image recording will be conducted automatically after the set duration.
- If a single image recording trigger is received (or if the **REC** button is pressed) during the duration set for "INTERVAL", single image recording will be conducted immediately.

GB



Alarm trigger while in single image recording mode

If both alarm recording and single image recording modes are set, alarm recording will be conducted as indicated below.

- If an alarm trigger is received while in single image recording mode, alarm recording will be conducted in 3-hour recording mode then single image recording mode will continue.

NOTE:

- During single image recording mode, alarm recording can only be conducted in 3-hour recording mode.

SERIES RECORDING

Using 2 VCRs or more, the series recording function lets you switch recording from one unit to the next (only with VCRs of the same model as this one).

Series Recording Setup

- ❶ Connect 2 VCRs or more as illustrated below.
- ❷ Set the following items as indicated.

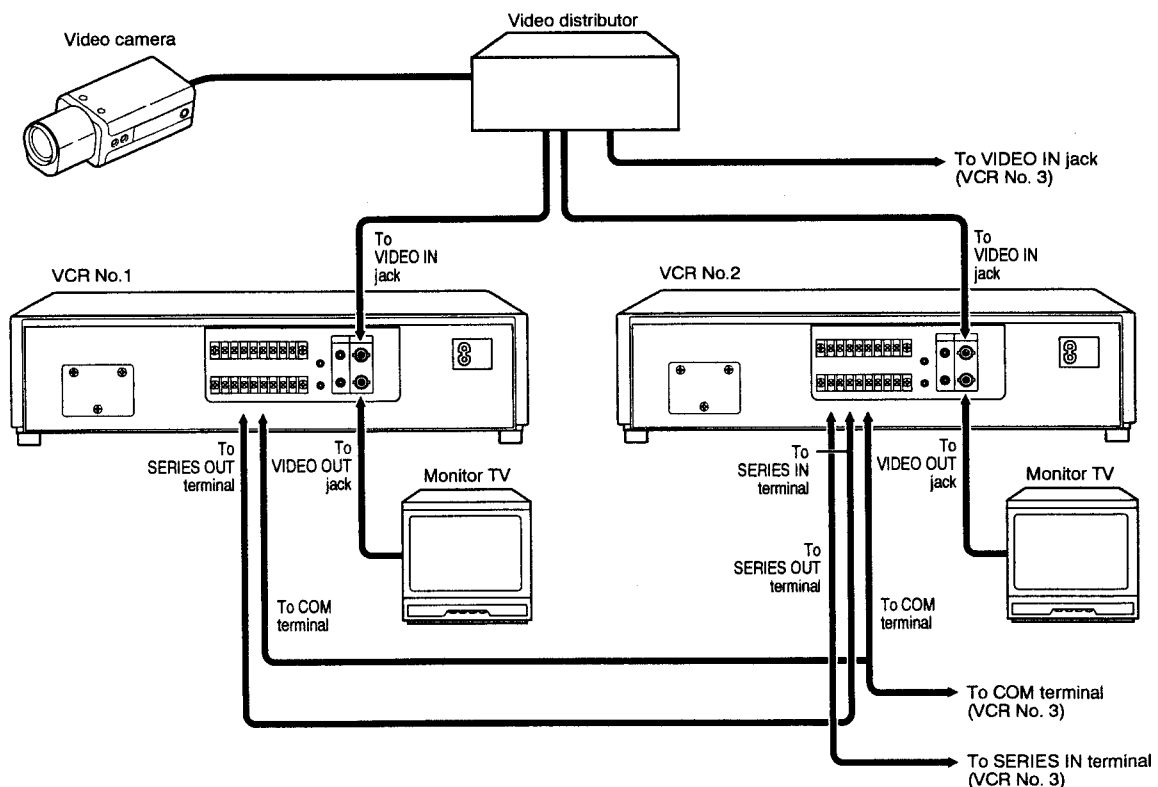
Item	VCR No.1	VCR No.2 and on
Cassette tape	Loaded	Loaded
Operation mode	Stop	Stop
REPEAT REC switch	OFF	OFF
Counter memory	Canceled	Canceled
"SERIES" (in MENU6 (ALARM SET))	Y (YES)	Y (YES)
Timer recording	OFF (not set)	OFF (not set)
Power	ON	OFF
Security lock	Canceled	Set

- ❸ Press the **REC** button on VCR No.1.
 - Recording will start in series recording mode.
- ❹ Set the security lock on VCR No.1.
 - When the counter on VCR No.1 reaches 2H57M00S or if the end of the tape is reached, the output at the **SERIES OUT** connector will switch from High to Low. This will turn on the power on VCR No.2 and recording will start.
 - When the end of the tape is reached on VCR No.1, the tape will rewind and stop. ("OFF" will be displayed on the digital display.)

NOTES:

- During series recording, autorepeat recording or timer recording are not possible.
- If the counter reading on VCR No.1 is 2H57M00S or more, when the **REC** button is pressed (step ❸), it will turn the power on and recording will start on VCR No.2.
- If in the MENU 6 (ALARM SET) "SERIES" is set to "N", series recording will not be possible.

Series recording connections



NORMAL PLAYBACK

Normal Playback

- ❶ Turn on the power to the VCR and TV monitor.
- ❷ Load the video cassette tape.
- ❸ Press the **REC/PLAY SPEED ▼** (or **▲**) button to select the playback speed.
 - *The selected playback speed is displayed on the digital display.*
 - *If the playback speed is set to "000", playback (step ❹) will not be possible.*

NOTE:

- A slow motion effect or accelerated playback effect can be achieved by using a slower or faster playback speed than the speed used for recording.
- ❹ Press the **PLAY** button.
 - *Playback starts.*
 - *If necessary, adjust the tracking to eliminate the noise from the picture.*
 - ❺ To stop playback, press the **STOP** button.
 - *To advance or rewind the tape, press the **FF/CUE** or **REW/REVIEW** button.*

NOTES:

- A tape recorded on another make of time lapse VCR cannot be played back on this unit.
- A tape recorded on this VCR cannot be played back on another make of time lapse VCR.

Tracking Control

If there is noise in the image during playback,

- ❶ While looking at the playback picture, press and hold the **TRACKING/V. STILL+** button to minimize the noise.
- ❷ If it cannot be minimized, press the **TRACKING/V. STILL-** button.

Sharpness Control

Adjust the **SHARPNESS** control towards "SHARP" or "SOFT" for the desired sharpness of the image.

Audio Playback

- Audio playback is only possible in 3-hour, 12-hour and 24-hour modes.
- The playback speed has to be the same as the recording speed, for normal playback of the audio.
- For a tape recorded in 12-hour and 24-hour recording modes, to playback the audio, press the **SEARCH/AUDIO ON** button after pressing the **PLAY** button. "A" will be displayed to the left of the playback speed on the digital display.

NOTE:

- Noise will appear in the image when audio playback is used in 12- or 24-hour modes.

GB

SPECIAL PLAYBACK ①

Picture Search

- ① Press the **FF/CUE** (or **REW/REVIEW**) button, during normal playback.
 - *The image can be seen while the tape is advanced (or rewound) at high speed.*
- ② To return to normal playback, press the **PLAY** button.

NOTES:

- During picture search, noise (horizontal bars) will appear in the picture.
- The sound is muted.

GB

Still Image

- ① Press the **STILL/PAUSE** button, during normal playback.
 - *A still image can be viewed.*
- ② To return to normal playback, press the **PLAY** button.

NOTES:

- If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.
- If the image is unstable (rolling vertically), adjust the vertical lock control to correct.

Vertical Lock Control

During still image mode,

- ① Press and hold the **TRACKING/V. STILL+** button to reduce the vertical rolling of the image.
- ② If it cannot be corrected, press the **TRACKING/V. STILL-** button.

Frame Advance

- ① Press the **FF/CUE** (or **REW/REVIEW**) button, during still image mode.
 - *The still image is advanced (or rewinded) of one image (field).*
- ② To return to normal playback, press the **PLAY** button.

Reverse Playback

- ① Press and hold the **REV** button, during normal playback.
 - *Reverse playback will start.*
- ② To return to normal playback, release the **REV** button.

NOTES:

- During reverse playback, noise will appear in the picture.
- Reverse playback is only possible during 3-hour playback speed mode.
- The sound is muted.

Recording Check

- ① During recording, press the **PLAY (REC CHECK)** button.
 - *The tape will be rewound and then played back. The VCR will then return to the previous recording mode.*

NOTE:

- During recording check operations, recording is suspended momentarily.

SPECIAL PLAYBACK ②

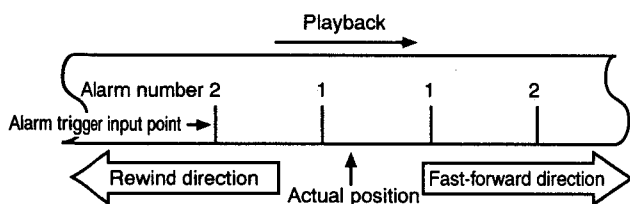
Alarm Search

- ❶ Press the **SEARCH/AUDIO ON** button during stop mode.
 - "AL SEARCH 01" will be displayed on screen.
"RL SE 01" will be displayed on the digital display.
- ❷ Press the **REC/PLAY SPEED ▾** (or **▲**) button to set the desired alarm number (1 to 99), then press the **FF/CUE** (or **REW/REVIEW**) button.
 - The desired alarm is searched and a still image of the beginning of the alarm recording will appear on-screen.

NOTE:

- The alarm number is relative to the actual tape position. (Please refer to the illustration below.)

- ❸ Press the **PLAY** button.
 - Playback will start.



Alarm Scan

- ❶ Press the **SEARCH/AUDIO ON** button twice during stop mode.
 - "AL SC RN" will be displayed on the digital display and on screen.
- ❷ Press the **FF/CUE** (or **REW/REVIEW**) button.
 - The unit will advance (or rewind) the tape at high speed and playback the first 5 seconds of every alarm recording.
 - To cancel the alarm scan mode, press the **STOP** button.
- ❸ While the desired recording is being played back, press the **PLAY** button.
 - Playback will start, alarm scan mode is cancelled.

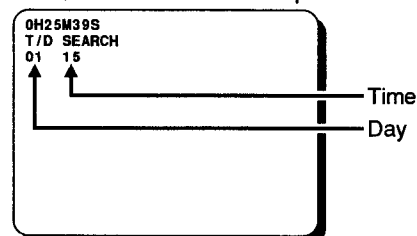
NOTE:

- The alarm scan and alarm search functions will only be possible if the recording speed was set to 3-hour mode and the recording duration to 20 seconds or more.

Day/Time Search

- ❶ Press the **SEARCH/AUDIO ON** button three times during stop mode.
 - "T/D SEARCH 01 00" will be displayed on screen.
"Td 0100" will be displayed on the digital display.

Date/Time Search Example



- ❷ Press the **REC/PLAY SPEED ▾** (or **▲**) button to set the desired day, then press the **SHIFT →** button.
- ❸ Press the **REC/PLAY SPEED ▾** (or **▲**) button to set the desired hour.
- ❹ Press the **FF/CUE** (or **REW/REVIEW**) button.
 - The desired day/time is searched and a still image of the recording will appear on-screen.
- ❺ Press the **PLAY** button.
 - Playback will start.

NOTES:

- If during a search the end of the tape is reached, the tape will rewind and stop. If the beginning of the tape is reached, it will stop.
- Day/time search may not function properly on tapes used for alarm recording.
- The day/time search function may not operate correctly if searching for a timer recording time or **CLOCK ADJUSTMENT** time.

GB

TAPE COUNTER

Using the counter, it is easy to find a desired recording.

- ❶ Press the **COUNTER RESET** button, at the beginning of the desired recording.
 - The counter will be reset to "0_H 00_M 00_S".
- ❷ Press the **COUNTER MEMORY** button.
 - "M" is displayed on the digital display.
 - To cancel the counter memory function, press the **COUNTER MEMORY** button a second time.
- ❸ After recording or playback, press the **REW/REVIEW** button in stop mode.
 - The tape is rewound to the counter "0_H 00_M 00_S" reading.
 - If you rewind the tape past the "0_H 00_M 00_S" position, press the **FF/CUE** button.

GB

NOTES:

- There is no tape counter indication for the blank portions of the tape.
- In the 3-hour recording speed mode only, the tape counter indicates real hours, minutes and seconds.
- In the other recording speed modes, the tape counter indication is a ratio of the 3-hour mode base indication. (In 12-hour recording mode, each "second" of the tape counter actually represents approximately $(12/3) + 1 = 5$ real seconds.)
- There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.
- When rewinding the tape past the "0_H 00_M 00_S" position, a minus (–) sign will be displayed.

SETTING THE SECURITY LOCK

The security lock function is designed to prevent accidental stopping of recording if the **STOP** button is pressed inadvertently.

- ① While holding the **SHIFT** ➡ button, press the **REC/PLAY SPEED** ▲ button.

◦ "1" is displayed on the digital display.

To cancel the security lock, while holding the **SHIFT** ➡ button, press the **REC/PLAY SPEED** ▼ button, "1" will be erased from the digital display.

NOTES:

- While the security lock is engaged all commands, except the one to cancel the security lock, are disabled.
- The security lock cannot be engaged while a menu is displayed.

SETTING THE SW OUT TERMINAL OUTPUT

MENU 2

GB

While recording, different outputs can be selected for the **SW OUT** terminal.

- ① Press the **MENU** button, the MENU 2 (SW OUT) is displayed.

MENU 2 (Initial screen)

(SW OUT)	
FIELD	01
TIMING	FIELD
(CLOCK ADJUSTMENT)	
TIME ADJ.	01:00
OPERATION	IN
(DISPLAY)	
DATE	Y
TIME	Y
AL.COUNT	Y
SPEED	Y

- ② Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the "FIELD" (or "FRAME").

◦ With each press of the button, the setting will change as indicated below.

→ 01 ↔ 02 ↔ 03 ↔ 04 ↔ 05 ↔ 10 ↔ 30 ↔ 60 ←

- ③ Press the **SHIFT** ↓ button.

◦ The "TIMING" setting starts flashing.

- ④ Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the "TIMING".

FIELD . . . 1 pulse is output after each set number of fields.

FRAME . . 1 pulse is output after each set number of frames.

- ⑤ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

◦ The setting procedure is now completed.

NOTE:

- If "TIMING" is set to FRAME (see step ④), "FRAME" will be indicated instead of "FIELD".

CLOCK ADJUSTMENT

MENU 2

When using 2 or more VCRs of this same model, the clock on the second VCR and on, can be synchronized with the clock on the first VCR, using the CLOCK ADJUSTMENT function.

- ① Connect the **CLOCK SET OUT** terminal on VCR 1 to the **CLOCK SET IN** terminal on VCR 2.
- ② Repeat the procedure for all the other VCRs, connecting the **CLOCK SET OUT** terminal on VCR 2 to the **CLOCK SET IN** terminal on VCR 3, and so on.
- ③ Press the **MENU** button to display the MENU 2 (CLOCK ADJUSTMENT).
- ④ Press the **SHIFT ↓** button, until the "TIME ADJ." (time of the adjustment) setting is flashing.
- ⑤ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the hour at which the adjustment will be conducted, then press the **SHIFT ↓** button.

NOTES:

- Be sure to set the same time on all the VCRs.
- The clock adjustment cannot be set to "00:00".

- ⑥ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set "OUT" for the "OPERATION" item.

OUT On the first VCR only

IN On all other VCRs

MENU 2 Example setting (VCR 1)

〈SW OUT〉	
FIELD	01
TIMING	FIELD
〈CLOCK ADJUSTMENT〉	
TIME ADJ.	03:00
OPERATION	OUT
〈DISPLAY〉	
DATE	Y
TIME	Y
AL.COUNT	Y
SPEED	Y

- ⑦ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure on the first VCR is now completed.
- ⑧ Repeat the procedure for all the other VCRs, setting "TIME ADJ." (to the same time as set on the first VCR) and "OPERATION" to "IN".

SETTING THE BUZZER

MENU 3

- ① Press the **MENU** button to display the MENU 3 (BUZZER SET).

MENU 3 (Initial screen)

〈BUZZER SET〉	
ALARM IN	Y
TAPE END	Y
KEY IN	N
〈OTHER〉	
REPEAT	MODE1
TAPE END	-3M
ALARM MODE	Y
RS-232C	1200

- ② Press the **SHIFT ↓** button, until the desired item for which the buzzer function will be set is flashing.
- ③ Press the **REC/PLAY SPEED ▼** (or **▲**) button to set "Y" for the functions described below.

ALARM IN The buzzer will be heard during alarm recording.

TAPE END The buzzer will be heard when the end of the tape is reached during recording.

KEY IN The buzzer will be heard when one of the VCR buttons is pressed.

- ④ Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

NOTES:

- If "N" is set, the buzzer will not be heard.
- During timer recording mode, security lock engaged mode and alarm recording mode, the buzzer will not be heard when a button related to one of these modes is pressed, even if "Y" is set for the "KEY IN" item.

(OTHER) MENU SETTINGS AND SETUP

MENU 3

The (OTHER) menu lets you setup the autorepeat mode, the END OUT output terminal signal timing, the alarm mode and the data transfer speed when using the RS-232C connector.

- 1 Press the **MENU** button to display the MENU 3 (OTHER).

MENU 3 (Initial screen)

<BUZZER SET>	
ALARM IN	Y
TAPE END	Y
KEY IN	N
<OTHER>	
REPEAT	MODE1
TAPE END	-3M
ALARM MODE	Y
RS-232C	1200

Autorepeat Recording Mode Setup

- 2 Press the **SHIFT ↓** button, until the "REPEAT" setting is flashing.
 - 3 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired autorepeat recording mode.
 - MODE 1 The autorepeat mode is automatically canceled if there is an alarm trigger.
 - MODE 2 Autorepeat recording takes place even if there is an alarm trigger.
- Press the **SEARCH/AUDIO ON** button to complete the setting procedure and return to the normal screen display.

END OUT Terminal Output Setup

- 4 Press the **SHIFT** button.
 - The "TAPE END" setting starts flashing.
 - 5 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired END OUT terminal output mode.
 - 3M The output at the END OUT terminal will become 0 V (Low) when the tape counter reading reaches "2H57M00S" (3 minutes before the end of the tape).
 - END The output at the END OUT terminal will become 0 V (Low) when the tape reaches the end.
- Press the **SEARCH/AUDIO ON** button to complete the setting procedure and return to the normal screen display.

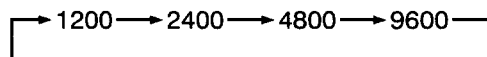
Alarm Mode Setup

- 6 Press the **SHIFT ↓** button.
 - The "ALARM MODE" setting starts flashing.
 - 7 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired alarm mode.
 - N Alarm recording is not performed even if there is an alarm trigger.
 - Y Alarm recording is done when there is an alarm trigger.
 - Y1 Alarm recording is done only when there is an alarm trigger during programmed timer recording.
 - Y2 Alarm recording is done only if there is an alarm trigger and the VCR is not in programmed timer recording mode.
- Press the **SEARCH/AUDIO ON** button to complete the setting procedure and return to the normal screen display.

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RS-232C Connector Data Transfer Speed Setup

- Set the speed at which the computer will communicate with the VCR through the RS-232C operation board (sold separately).
- 8 Press the **SHIFT ↓** button.
 - The "RS-232C" setting starts flashing.
 - 9 Press the **REC/PLAY SPEED ▼** (or **▲**) button to set the desired transfer speed.
 - Press the **▲** button to change the displayed speed in the sequence below.



- 10 Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

NOTE:

- The RS-232C item will not be displayed if the optional RS-232C operation board is not installed in the VCR. For more details on transfer speed, please refer to the computer and to the RS-232C operation board instruction manuals.

By setting the holidays, timer recording will be conducted on those days, as set for Sundays.

- 1 Press the **MENU** button to display the MENU 5 (HOLIDAY SET).

MENU 5 (Initial screen)

HOLIDAY SET			
1	--	--	11 --
2	--	--	12 --
3	--	--	13 --
4	--	--	14 --
5	--	--	15 --
6	--	--	16 --
7	--	--	17 --
8	--	--	18 --
9	--	--	19 --
10	--	--	20 --

Month
Day

- 2 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the month of the holiday, then press the **SHIFT** ➡ button.
- 3 Press the **REC/PLAY SPEED** ▼ (or ▲) button to set the day of the holiday.
- 4 Press the **SHIFT** ➡ (or ↓) button, the next line to set starts flashing.
 - Repeat steps 2 to 4 to set up to 20 holidays.
- 5 Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.
 - The setting procedure is now completed.

NOTE:

- If setting holidays, be sure that a timer recording is set for Sunday. If not, this function will not operate.

Example of timer recording with a holiday setting (the holiday falling on the Wednesday)

	Tuesday	Wednesday	Sunday
Example 1			
Normal timer recording	24H →	96H →	120H →
With holiday setting	24H →	120H →	120H →
Example 2			
Normal timer recording	24H →	24H →	120H →
With holiday setting	24H →	120H → 24H →	120H →

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CHECKING USAGE DURATION, POWER FAILURE AND FAILURE DUE TO CONDENSATION

MENU 7

- ① Press the **MENU** button to display the MENU 7 (USED TIME), (POWER LOSS), (DEW LOSS).
 - (USED TIME) The video heads usage duration and the power on duration are displayed.
 - (POWER LOSS) The number of power losses, and the date and time of the most recent power failure and recovery are displayed.
 - (DEW LOSS) The number of failures due to condensation, and the date and time of the most recent failure and recovery are displayed.

MENU 7 Sample display

```

<USED TIME>
VIDEO      00003H
POWER      00007H

<POWER LOSS>
002 FAIL 12-10 07:15
RET 12-10 07:30
<DEW LOSS>
001 FAIL 12-10 11:00
RET 12-10 12:00
  
```

- ② Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

NOTE:

- If the **MENU RESET** button is pressed while the MENU 7 is displayed, the (POWER LOSS) and (DEW LOSS) data is erased. The (USED TIME) data cannot be reset.
- "P" will be erased from the digital display.

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CHECKING THE ALARM RECORDINGS TIME

MENU 8

- ① Press the **MENU** button to display the MENU 8 (ALARM TIME).
 - The number of alarm triggers, and the 8 most recent alarm recording times are displayed.

MENU 8 Sample display

```

<ALARM TIME>
010 03-12 19:00
01-11 23:00
25-10 15:00
25-10 08:00
25-10 06:00
15-10 20:00
15-10 16:35
15-10 10:52
  
```

NOTE:

- The data for the previous alarm recordings is erased.
- ② Press the **SEARCH/AUDIO ON** button, the normal screen is displayed.

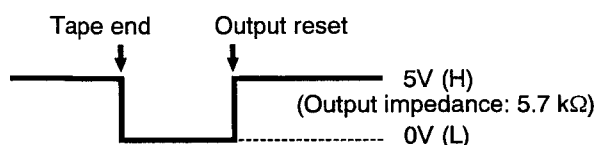
NOTE:

- If the **MENU RESET** button is pressed while the MENU 8 is displayed, the displayed data is erased.
- "RL" will be erased from the digital display.

ABOUT THE OUTPUT TERMINALS

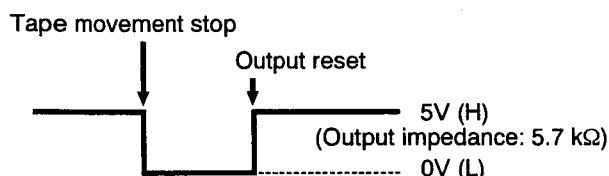
END OUT Terminal

- During recording, when the end of the tape is reached or when the tape counter reading indicates 2 hours 57 minutes, the output becomes 0V (Low). When the end of the tape is reached, "OFF" will be displayed on the digital display.
- If the **REPEAT REC** switch is set to the "ON" position, the output becomes 0V (Low) for about 2 seconds only.
- To reset the output, press the **STOP** or **EJECT** button.



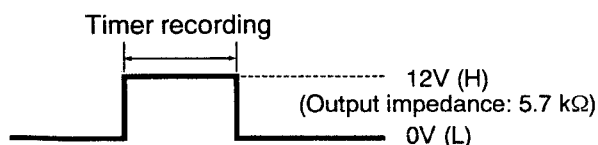
WARNING OUT Terminal

- If the tape stops or other problem, the output becomes 0V (Low).
- To reset the output, unplug the power cord then plug it back in or press the **ALL RESET** button.



TIMER OUT Terminal

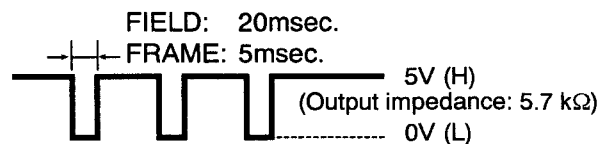
- During timer recording DC 12 V (High) are output. (During timer recording stand-by mode, the output is 0V (Low).)



SW OUT Terminal

When recording, a pulse signal (DC 5V) is output at the **SW OUT** terminal after each recording period.

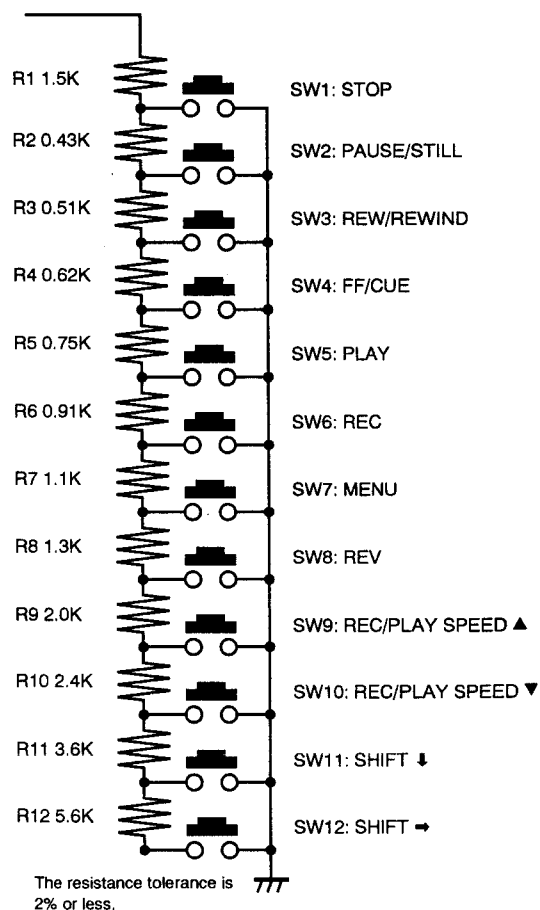
This terminal is usually connected to the switch input (SW IN) of devices like a camera switcher unit, or a quad compressor.



REMOTE Jack

- Remote control of the VCR is possible by connecting a remote controller with a circuit such as indicated below, to the **REMOTE** jack.
- Use a 3.5 mm mini-jack type plug.
- The connection should be done using a shielded cable no more than 5 meters long.

Remote control circuit



DAILY INSPECTION

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

- ❶ Turn on the power to the VCR, camera, TV monitor and other connected devices.
- ❷ Check that the image received on the TV monitor is correct.
- ❸ Check that the on-screen display of the date and time is correct.
- ❹ Press the **REW/REVIEW** button to rewind the recorded tape a few seconds.
- ❺ Press the **PLAY** button and check that the playback image is correct.
 - Check in particular playback of time lapse recording (12- or 960-hour mode).
- ❻ Check that the recorded date and time are correct.

NOTES:

- If the security lock is engaged, it has to be released before proceeding to the inspection.
- If any problem is discovered during the inspection, turn off the VCR, unplug the power cord then consult your dealer.

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TROUBLESHOOTING GUIDE

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No power	The power cord is not correctly connected to the wall outlet	Connect the power cord firmly into the wall outlet
	The unit is in timer recording stand-by mode	This is normal, not a malfunction
No image displayed on the monitor TV	The connections are not correct	Check that all connections are correct
	The power to the camera and/or monitor TV is not turned on	Turn all connected devices power on
The buttons do not respond	A cassette tape is not loaded	Load a cassette and turn the power on
	All functions are suspended due to condensation	Wait for the "ddd" indicator to go off
	Alarm recording	Wait for the alarm recording to end
	The security lock is engaged	Cancel the security lock
Recording is not possible (the tape is ejected)	The loaded cassette has no erasure-prevention tab	Load a cassette tape with erasure-prevention tab or cover the tab hole with adhesive tape
Autorepeat recording is not possible	"RL" is displayed on the digital display	Display MENU 8, then press the MENU RESET button to turn off the "RL" indicator
Timer recording is not possible	The date and time are not set correctly	Set the date and time correctly
	The unit is not set to timer recording stand-by mode	Press the TIMER button to display "□" on the digital display
	"N" is selected for the timer recordings	Be sure to select "Y" for the programmed timer recordings
Alarm recording is not possible	"OFF" is displayed on the digital display	Press the EJECT, STOP, FF/CUE, REW/REVIEW or PLAY button to turn the indicator off
Noise in the playback picture	The video heads need cleaning	Clean the video heads
The date and time are not recorded	The ON SCREEN switch is set to the "OFF" position	Set the ON SCREEN switch to the "T/D" position
The cassette tape cannot be ejected	Problem with the system	Turn the power off, then on again

Periodic Inspection and Maintenance

Periodic inspection and maintenance should be referred to your dealer.

If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicate that the video heads need cleaning.

The video heads should be inspected every 1,000 hours of use to determine if they need to be replaced.

The video heads usage can be checked using the MENU 7 (USED TIME).

After a Power Failure

If after a power failure the recording speed is reset to 3-hour mode, it is due to insufficient backup battery charge. This is not a malfunction.

System Down

If the unit does not function at all, try the following.

- ❶ Unplug the power cord then plug it back in.
- ❷ Reset the memory. (Press the **ALL RESET** button. Under normal conditions, do not touch the **ALL RESET** button.)
- ❸ If the problem is not corrected after performing steps ❶ and ❷ a few times, consult your dealer.

SPECIFICATIONS

General Specifications

Recording method	Dual-azimuth 2-head rotating helical scanning system
Audio recording	In 3-, 12-, and 24-hour modes
Tape speed	23.39 mm /sec (3-hour mode)
Specified video cassette tape	VHS 1/2 inch video cassette tape
Recording/playback time	3, 12, 24, 48, 72, 96, 120, 168, 240, 360, 480, 720 and 960 hours (when using E-180 tape), SINGLE IMAGE
Fast forward/rewind time	approximately 4 minutes (when using E-180 tape)
Television system	PAL colour TV system

Video

Recording method	Luminance signal: FM recording
	Chrominance signal: Down-converted direct recording
Video input	1 Vp-p, BNC, 75 Ω , unbalanced
Video output	1 Vp-p, BNC, 75 Ω , unbalanced
Horizontal resolution	Black & white mode 350 line or more
	Colour mode 250 line or more

Audio

Input	-8 dBs, RCA pin jack, 22 k Ω , unbalanced
Output	-8 dBs, RCA pin jack, 1 k Ω , unbalanced
Microphone input	-60 dBs, 3.5 mm mini jack, 10 k Ω , unbalanced

Connectors

Alarm input	Contact closes with no voltage
Alarm output	DC 5 V (± 0.5)/5.7 k Ω
Alarm reset input	Contact closes with no voltage
End output	DC 5 V (± 0.5)/5.7 k Ω
Warning output	DC 5 V (± 0.5)/5.7 k Ω
1 SHOT input	Contact closes with no voltage
Series input	Contact closes with no voltage
Series output	DC 5 V (± 0.5)/5.7 k Ω
Switch output	DC 5 V (± 0.5)/5.7 k Ω
Timer output	DC 12 V (± 0.5)/5.7 k Ω
Clock set input	Contact closes with no voltage
Clock set output	DC 5 V (± 0.5)/5.7 k Ω
Ext timer input	Contact closes with no voltage
Common	0 V (GND)
Remote control input	3.5 mm mini jack

Other Specifications

Operating temperature range	5°C to 40°C
Operating humidity range	80% or less
Power requirements	220 – 240 V AC, 50 Hz
Power consumption	18 W
Dimensions	420 (W) x 99 (H) x 351 (D) mm
Weight	approximately 5.5 kg

NOTE: The specifications and external appearance of this unit are subject to change without notice.

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